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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/870,095	05/30/2001	Ken'ichi Kasazumi	10873.726US01	8515

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EXAMINER

ORTIZ CRIADO, JORGE L

ART UNIT	PAPER NUMBER
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2697

DATE MAILED: 08/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/870,095

Applicant(s)

KASAZUMI ET AL.

Examiner

Jorge L Ortiz-Criado

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) 10-12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakame U.S. Patent No. 5,974,011.

Regarding claim 1, Nakame discloses an optical pickup comprising:

- a coherent light source (See col. 12, lines 16-17; Fig. 4);
- a focusing optical system that converges and directs light from the coherent light source onto an information carrier (See col. 12, lines 6-25; Fig. 4); and
- a spot size adjustor that reduces a size of a light spot formed on the information carrier in a recording operation, relative to a size of a light spot in a reproducing operation, mainly in a direction perpendicular to an information track (See col. 12, lines 6-25; col. 18, lines 1-33; Figs. 4, 28, 29, 36).

Regarding claim 2, Nakame discloses wherein the spot size adjuster includes a variable phase filter that is disposed between the coherent light source and the focusing optical system and that is capable of varying a quantity of a phase shift (See col. 12, lines 6-25; col. 18, lines 1-33; Figs. 4, 28,29,36),

wherein the variable phase filter is divided into at least three regions to produce a phase difference in the direction perpendicular to an information track of the information carrier (See col. 12, lines 6-25; col. 18, lines 1-33; Figs. 4, 28,29,36).

Regarding claim 3, Nakame discloses wherein the variable phase filter is divided into three regions (See col. 12, lines 6-25; col. 18, lines 1-33; Figs. 4, 28,29,36), and

a width of a center region among the three is in a range of 10% to 20% of a width of a light beam passing through the variable phase filter (See col. 2, lines 4-28; Fig. 3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakame U.S.

Patent No. 5,974,011 in view of Tanase et al. U.S. Patent No. 6,240,056.

Regarding claim 4, Nakame discloses all the limitations based on claim 2 as outlined above. Nakame further discloses wherein the variable phase filter is aligned in a direction parallel with a polarization direction of light from the coherent light source (See col. 12, lines 16-25; Figs. 28, 29).

Nakame further teaches having a liquid crystal modulation filter to modulate the transmitted signal to obtain the desired spot shape (See col. 17, lines 3-27, lines Fig. 24)

But Nakame fails to disclose wherein the variable phase filter includes a homogeneous-alignment liquid crystal.

However this feature is well known in the art as evidenced by Tanase et al., which discloses an optical pickup having variable phase filter that includes a homogeneous-alignment liquid crystal (See col. 11, line 64 to col. 12, line 5; col. 13, lines 25-67 to col. 14, lines 1-27; Figs. 14-ref. #12,16,17A,17B)

Therefore it would have been obvious to one with ordinary skill in the art at the time of the invention to include homogeneous-alignment liquid crystal in order to have the property of transmitting only a laser beam that is polarized in particular direction and further obtain the desired spot shape as suggested by Tanase et al.

Regarding claim 5, Nakame discloses all the limitations based on claim 1 as outlined above. Nakame further discloses wherein the spot size adjustor includes:

a variable wavelength plate that is disposed between the coherent light source and the focusing optical system and that is capable of varying a quantity of birefringence (See col. 12, lines 6-25; col. 18, lines 1-33; Figs. 4, 28,29,36);

wherein the variable wavelength plate is divided into at least three regions to produce a phase difference in the direction perpendicular to the information track of the information carrier (See col. 12, lines 6-25; col. 18, lines 1-33; Figs. 4, 28,29,36).

Nakame further teaches having a modulation filter to modulate the transmitted signal to obtain the desired spot shape (See col. 17, lines 3-27, lines Fig. 24).

But Nakame fails to disclose an analyzer disposed between the variable wavelength plate and the focusing optical system.

However this feature is well known in the art as evidenced by Tanase et al., which discloses an analyzer disposed between the variable wavelength plate and the focusing optical system (See col. 11, lines 25-63; Fig. 14- ref. #13).

Therefore it would have been obvious to one ordinary skill in the art at the time of the invention to include an analyzer disposed between the variable wavelength plate and the focusing optical system in order to have the property of transmitting only a laser beam that is polarized in particular direction and further obtain the desired spot shape as suggested by Tanase et al.

Regarding claim 6, The combination of Nakame with Tanase et al. as modified above would show wherein the variable wavelength plate includes a homogeneous-alignment liquid crystal element that is aligned in a direction parallel with a polarization direction of light from the coherent light source (See Tanase et al.; col. 11, line 64 to col. 12, line 5; col. 13, lines 25-67 to col. 14, lines 1-27; Figs. 14-ref. #12,16,17A,17B)

3. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakame U.S. Patent No. 5,974,011 as applied to claim 1 above, in view of Tanase et al. U.S. Patent No. 6,240,056 and further in view of Kato et al. U.S. Patent No. 5,519,685.

Regarding claim 7, Nakame discloses all the limitations based on claim 1, as outlined above. Nakame further discloses wherein the spot size adjustor includes:

a variable wavelength plate that is disposed between the coherent light source and the focusing optical system and that is capable of varying a quantity of a phase shift (See col. 12, lines 6-25; col. 18, lines 1-33; Figs. 4, 28, 29, 36);

Nakame further teaches the feature of having a modulation filter divided into four regions to modulate the transmitted signal to obtain the desired spot shape (See col. 13, lines 50-57; Fig. 9)

Nakame does not disclose and a variable polarization phase filter that is disposed between the variable wavelength plate and the focusing optical system to produce a phase difference in the direction perpendicular to the information track of the information carrier, so as to provide a phase shift of a desired quantity to only a polarized component of a first polarization type among the light from the coherent light source, the optical pickup further comprising:

a polarized light separator that separates reflected light from the information carrier into a polarized component of the first polarization type, and

a polarized component of a second polarization type that is different from the first polarization type; a first photodetector that detects the polarized component of the first polarization type of the reflected light from the information carrier; and a second photodetector

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that detects the polarized component of the second polarization type of the reflected light from the information carrier.

Tanase et al. teaches a variable wavelength plate and a variable polarization phase filter that is disposed between the variable wavelength plate and the focusing optical system and is divided into regions to produce a phase difference in the direction perpendicular to the information track of the information carrier, so as to provide a phase shift of a desired quantity to only a polarized component of a first polarization type among the light from the coherent light source (See col. 11, line 25 to col. 12, line 5; col. 13, lines 25-67 to col. 14, lines 1-27; Figs. (14-ref. #12,13),16,17A,17B).

It would have been obvious to one with ordinary skill in the art at the time of the invention to include an a variable polarization phase filter that is disposed between the variable wavelength plate and the focusing optical system in order to provide a phase shift of a desired quantity to only a polarized component of a first polarization type among the light from the coherent light source and further obtain the desired spot shape as suggested by Tanase et al.

But, the combination of Nakame with Tanase et al. modified above does not teaches, a polarized light separator that separates reflected light from the information carrier into a polarized component of the first polarization type, and a polarized component of a second polarization type that is different from the first polarization type;

a first photodetector that detects the polarized component of the first polarization type of the reflected light from the information carrier; and a second photodetector that detects the polarized component of the second polarization type of the reflected light from the information carrier.

However this feature is well known in the art as evidenced by Kato et al. (See col. 9, lines 60-67 to col. 10 lines 1-40; col. 11, lines 14-35; col. 12, lines 25-46; Figs. 1,2,3,5,7,8).

Therefore it would have been obvious to one with ordinary skill in the art at the time of the invention to include an a variable polarization phase filter that is disposed between the variable wavelength plate and the focusing optical system in order to provide a phase shift of a desired quantity to only a polarized component of a first polarization type among the light from the coherent light source and further obtain the desired spot shape as suggested the combination of Nakame with Tanase et al. modified above, and including a polarized light separator that separates reflected light from the information carrier into a polarized component of the first polarization type, and a polarized component of a second polarization type that is different from the first polarization type and a first photodetector that detects the polarized component of the first polarization type of the reflected light from the information carrier; and a second photodetector that detects the polarized component of the second polarization type of the reflected light from the information carrier in order to suppress the cross-talk as suggested by Kato et al.

Regarding claim 8, The combination Nakame with Tanase et al. and Kato et al. modified above would show wherein the variable wavelength plate includes a homogeneous-alignment liquid crystal element that is aligned in a direction tilted at approximately 45.degree. to a polarization direction of light from the coherent light source (See Tanase et al., col. 15, lines 15-36).

Regarding claim 9, The combination Nakame with Tanase et al. and Kato et al. modified above would show wherein the variable polarization phase filter includes a homogeneous-alignment liquid crystal element that is aligned in a direction parallel with a polarization direction of light from the coherent light source (See Tanase et al., col. 11, line 64 to col. 12, line 5; col. 13, lines 25-67 to col. 14, lines 1-27; Figs. 14-ref. #12,16,17A,17B).

Allowable Subject Matter

4. Claims 10,11 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
 - a. U.S. Patent No. 5,121,378 to Hirose et al., which discloses an optical pickup including a phase distribution converter.
 - b. U.S. Patent No. 5,724,334 to Ohba et al., which discloses an optical head device utilizing super-resolution technique.
 - c. U.S. Patent No. 5,796,683 to Sumi et al., which discloses a magneto-optical recording device having a controllable polarizing filter.
 - d. U.S. Patent No. 6,115,345 to Kato et al., which discloses a super-resolution optical head apparatus.

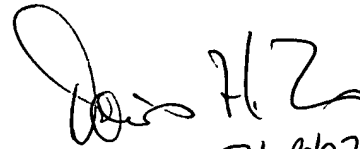
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jorge L Ortiz-Criado whose telephone number is (703) 305-8323. The examiner can normally be reached on Mon.-Thu. (8:30 am - 6:00 pm), Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DORIS H. TO can be reached on (703) 305-4827. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-6743 for regular communications and (703) 308-6743 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

joc
July 22, 2003


DORIS H. TO 7/22/03
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800